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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/745,293	12/20/2000	Shujin Zhang	CISCO-3041	6971

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EXAMINER
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JACOBS, LASHONDA T

ART UNIT	PAPER NUMBER
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2157

DATE MAILED: 04/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/745,293

Applicant(s)

ZHANG ET AL.

Examiner

LaShonda T. Jacobs

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-59 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-59 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4 and 5</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Valencia in view of Heimendinger et al (hereinafter, "Heimendinger", 6,278,532).

As per claims 1, 41 and 59, Valencia discloses a method, system and program storage device for providing computer network access, comprising:

- receiving a PPP session creation request from a client, said PPP session creation request including a control protocol frame encapsulated therein (col. 4, lines 1-33 and col. 7, lines 55-65);
- obtaining user domain information associated with said PPP session creation request (col. 4, lines 45-65);
- setting up a Layer 2 tunnel according to a parameter contained in said control protocol frame (col. 4, lines 1-33 and col. 5, lines 35-42) ;
- forwarding data packets from a PPP session with said client over said Layer 2 tunnel (col. 4, lines 1-33 and col. 7, lines 55-65); and
- forwarding IP frames received from said client over a link other than said Layer 2 tunnel (col. 5, lines 56-65).

However, Valencia does not explicitly disclose:

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- creating an ingress PPP object associated with an incoming PPP session, a host object associated with said client, and an egress PPP object associated with said Layer 2 tunnel;
- creating an egress IP object based upon obtained user domain information, said egress IP object associated with IP-based forwarding;
- linking said ingress PPP object, said host object, and said egress PPP object; and
- linking said host object and said egress IP object.

Heimendinger discloses an apparatus and method for reception and transmission of information using different protocols including:

- creating an ingress PPP object associated with an incoming PPP session, a host object associated with said client, and an egress PPP object associated with said Layer 2 tunnel (col. 7, lines 15-32 and col. 16, lines 32-67; The session object (ingress PPP object), 316, source object (host object) 312 and destination PPP object (egress PPP object) of Heimendinger meets the definition of the ingress, host and egress objects defined by the applicants' specification on pg. 12, lines 11-16);
- creating an egress IP object based upon obtained user domain information, said egress IP object associated with IP-based forwarding (col. 7, lines 15-32 and col. 16, lines 32-67; The session object (ingress PPP object), 316, source object (host object) 312 and destination PPP object (egress PPP object) of Heimendinger meets the definition of the ingress, host and egress objects defined by the applicants' specification on pg. 12, lines 11-16. Heimendinger teaches that the objects are created are based on information received from the session object when dialing a number to establish a PPP connection);

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- linking said ingress PPP object, said host object, and said egress PPP object (col. 7, lines 15-32 and col. 16, lines 32-67); and
- linking said host object and said egress IP object (col. 7, lines 15-32 and col. 16, lines 32-67).

Given the teaching of Heimendinger, it would have been obvious to one of ordinary skill in the art to modify Valencia by implementing or incorporating “object-oriented” software to create and link objects (ingress, host and egress PPP objects) from the primary object classes in order to receive information from a source and transfer the information to a destination.

As per claim 19, Valencia discloses a network device for providing computer network access, said network device comprising:

- a first interface for receiving a PPP session creation request from a client, said PPP session creation request including a control protocol frame encapsulated therein (col. 4, lines 1-33 and col. 7, lines 55-65);
- a second interface for forwarding data packets from a PPP session over a Layer 2 tunnel (col. 4, lines 1-33 and col. 7, lines 55-65);
- a third interface for forwarding IP frames over a link other than said Layer 2 tunnel (col. 5, lines 56-65);
- a memory (col. 4, lines 21-28); and
- a processor coupled with said first interface, said second interface, said third interfaces, and said memory (col. 3, lines 41-56), said processor including:
  - i. a domain information determiner for obtaining user domain information associated with said PPP session creation request (col. 4, lines 45-65);

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- ii. a PPP session forwarder for setting up a Layer 2 tunnel according to a parameter contained in said control protocol frame and thereby forwarding data packets from a PPP session with said client over said Layer 2 tunnel (col. 4, lines 1-33 and col. 5, lines 35-42); and
- iii. an IP frame forwarder for forwarding IP frames received from said client over a link other than said Layer 2 tunnel (col. 5, lines 56-65).

However, Valencia does not explicitly disclose:

- iv. an object generator for creating objects in said memory, said object generator creating an ingress PPP object associated with an incoming PPP session, a host object associated with said client, an egress PPP object associated with Layer 2 tunneling through said second interface, and an egress IP object associated with IP-based forwarding through said third interface, said egress IP object being created based upon obtained user domain information;
- linking said ingress PPP object, said host object, and said egress PPP object; and
- linking said host object and said egress IP object.

Heimendinger discloses an apparatus and method for reception and transmission of information using different protocols including:

- v. an object generator for creating objects in said memory, said object generator creating an ingress PPP object associated with an incoming PPP session, a host object associated with said client, an egress PPP object associated with Layer 2 tunneling through said second interface, and an egress IP object associated with IP-based forwarding through said third interface, said egress IP

object being created based upon obtained user domain information (col. 7, lines 15-32 and col. 16, lines 32-67; The session object (ingress PPP object), 316, source object (host object) 312 and destination PPP object (egress PPP object) of Heimendinger meets the definition of the ingress, host and egress objects defined by the applicants' specification on pg. 12, lines 11-16. Heimendinger teaches that the objects are created are based on information received from the session object when dialing a number to establish a PPP connection);

- linking said ingress PPP object, said host object, and said egress PPP object (col. 7, lines 15-32 and col. 16, lines 32-67); and
- linking said host object and said egress IP object (col. 7, lines 15-32 and col. 16, lines 32-67).

Given the teaching of Heimendinger, it would have been obvious to one of ordinary skill in the art to modify Valencia by implementing or incorporating "object-oriented" software to create and link objects (ingress, host and egress PPP objects) from the primary object classes in order to receive information from a source and transfer the information to a destination.

As per claim 33, Valencia discloses an apparatus for providing computer network access, said apparatus comprising:

- a PPP session receiving interface (col. 4, lines 1-33 and col. 7, lines 55-65);
- a PPP session Layer 2 tunneling interface (col. 4, lines 1-33 and col. 7, lines 55-65);
- an IP frame forwarding interface (col. 5, lines 56-65);
- a memory (col. 4, lines 21-28);

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- a processor coupled with said PPP session receiving interface, said PPP session Layer 2 tunneling interface, said IP frame forwarding interface, and said memory (col. 3, lines 41-56), said processor including:
  - i. a user domain information determiner (col. 4, lines 45-65);
  - ii. a PPP session forwarder (col. 4, lines 1-33 and col. 5, lines 35-42);
  - iii. an IP frame forwarder (col. 5, lines 56-65).

However, Valencia does not explicitly disclose wherein said memory includes:

- i. an ingress PPP object associated with said PPP session receiving interface;
  - ii. a host object associated with a client requesting network access;
  - iii. an egress PPP object associated with said PPP session Layer 2 tunneling interface; and
  - iv. an egress EP object associated with said IP frame forwarding interface;
- and said processor includes:
- ii. an object generator responsive to said user domain information determiner;
  - iv. linking said ingress PPP object, said host object, and said egress PPP object; and
  - v. linking said host object and said egress IP object.

Heimendinger discloses an apparatus and method for reception and transmission of information using different protocols including:

- i. an ingress PPP object associated with said PPP session receiving interface;
- ii. a host object associated with a client requesting network access;



iii. an egress PPP object associated with said PPP session Layer 2 tunneling interface; and

iv. an egress EP object associated with said IP frame forwarding interface (col. 7, lines 15-32 and col. 16, lines 32-67; The session object (ingress PPP object), 316, source object (host object) 312 and destination PPP object (egress PPP object) of Heimendinger meets the definition of the ingress, host and egress objects defined by the applicants' specification on pg. 12, lines 11-16.

Heimendinger teaches that the objects are created are based on information received from the session object when dialing a number to establish a PPP connection); and said processor includes:

ii. an object generator responsive to said user domain information determiner (col. 7, lines 15-32 and col. 16, lines 32-67);

iv. linking said ingress PPP object, said host object, and said egress PPP object (col. 7, lines 15-32 and col. 16, lines 32-67); and

v. linking said host object and said egress IP object (col. 7, lines 15-32 and col. 16, lines 32-67).

Given the teaching of Heimendinger, it would have been obvious to one of ordinary skill in the art to modify Valencia by implementing or incorporating "object-oriented" software to create and link objects (ingress, host and egress PPP objects) from the primary object classes in order to receive information from a source and transfer the information to a destination.

As per claims 2, 23 and 42, Valencia discloses:

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- wherein said setting up includes forwarding control protocol negotiations (abstract, col. 4, lines 45-49 and col. 5, lines 35-42).

As per claims 3, 24 and 43, Valencia further discloses:

- receiving an IP address through said Layer 2 tunnel, said IP address having been assigned to said client (col. 6, lines 47-56); and
- transferring said IP address to said client (col. 6, lines 47-56).

As per claims 4, 25 and 44, Valencia discloses:

- wherein said user domain information is obtained from said PPP session creation request (col. 4, lines 45-65).

As per claims 5 and 45, Valencia discloses:

- wherein said user domain information is obtained using a user profile (col. 4, lines 45-65).

As per claims 6, 27 and 46, Valencia discloses:

- wherein said user domain information is obtained from user identification information associated with a physical connection of said PPP session creation request (col. 4, lines 45-65).

As per claims 7, 28 and 47, Valencia discloses:

- wherein said user domain information is obtained from a line number used by said client for transmitting said PPP session creation request (col. 4, lines 45-65).

As per claims 8, 29 and 48 Valencia discloses:

- wherein said user domain information is obtained from user identification information associated with a physical location of said client (col. 4, lines 45-65).

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As per claims **9, 30, 34** and **49**, Valencia discloses the invention substantially as claimed.

However, Valencia does not explicitly disclose:

- maintaining a forwarding information base for said host object, said forwarding information base containing at least one association between a network address and either said ingress PPP object or said egress PPP object.

Heimendinger discloses an apparatus and method for reception and transmission of information using different protocols including:

- maintaining a forwarding information base for said host object, said forwarding information base containing at least one association between a network address and either said ingress PPP object or said egress PPP object (col. 7, lines 15-32, col. 16, lines 32-67 and col. 17, lines 1-12).

Given the teaching of Heimendinger, it would have been obvious to one of ordinary skill in the art to modify Valencia by implementing or incorporating “object-oriented” software to create and link objects (ingress, host and egress PPP objects) from the primary object classes in order to receive information from a source and transfer the information to a destination.

As per claims **10, 31, 36** and **50**, Valencia discloses the invention substantially as claimed.

However, Valencia does not explicitly disclose:

- wherein said forwarding information base includes a default link to said egress PPP object.

Heimendinger discloses an apparatus and method for reception and transmission of information using different protocols including:

- wherein said forwarding information base includes a default link to said egress PPP object (col. 7, lines 15-32, col. 16, lines 32-67 and col. 17, lines 1-12).

Given the teaching of Heimendinger, it would have been obvious to one of ordinary skill in the art to modify Valencia by implementing or incorporating “object-oriented” software to create and link objects (ingress, host and egress PPP objects) from the primary object classes in order to receive information from a source and transfer the information to a destination.

As per claims **11, 32, 35** and **51**, Valencia discloses:

- wherein said forwarding information base is stored in the form of a hash table (col. 12, lines 32-37).

As per claims **12, 20, 38** and **52**, Valencia discloses the invention substantially as claimed.

However, Valencia does not explicitly disclose:

- wherein said creating an ingress PPP object includes creating an access PPP object associated with a PPP connection to said client via a first interface.

Heimendinger discloses an apparatus and method for reception and transmission of information using different protocols including:

- wherein said creating an ingress PPP object includes creating an access PPP object associated with a PPP connection to said client via a first interface (col. 7, lines 15-32 and col. 16, lines 32-67; The session object (ingress PPP object), 316, source object (host object) 312 and destination PPP object (egress PPP object) of Heimendinger meets the definition of the ingress, host and egress objects defined by the applicants’ specification on pg. 12, lines 11-16. Heimendinger teaches that the objects are created

are based on information received from the session object when dialing a number to establish a PPP connection).

Given the teaching of Heimendinger, it would have been obvious to one of ordinary skill in the art to modify Valencia by implementing or incorporating "object-oriented" software to create and link objects (ingress, host and egress PPP objects) from the primary object classes in order to receive information from a source and transfer the information to a destination.

As per claims 13, 21, 39 and 53, Valencia discloses the invention substantially as claimed.

However Valencia does not explicitly disclose wherein said creating an egress PPP object includes:

- creating a first connection object containing a range of IP addresses;
- creating an aggregation PPP object associated with outgoing PPP frames; and
- creating a tunnel object associated with Layer 2 tunneling through a second interface.

Heimendinger discloses an apparatus and method for reception and transmission of information using different protocols including wherein said creating an egress PPP object includes:

- creating a first connection object containing a range of IP addresses;
- creating an aggregation PPP object associated with outgoing PPP frames; and
- creating a tunnel object associated with Layer 2 tunneling through a second interface (col. 7, lines 15-32 and col. 16, lines 32-67; The session object (ingress PPP object), 316, source object (host object) 312 and destination PPP object (egress PPP object) of Heimendinger meets the definition of the ingress, host and egress objects defined by the applicants' specification on pg. 12, lines 11-16. Heimendinger teaches that the objects

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are created are based on information received from the session object when dialing a number to establish a PPP connection).

Given the teaching of Heimendinger, it would have been obvious to one of ordinary skill in the art to modify Valencia by implementing or incorporating "object-oriented" software to create and link different objects from the primary object classes in order to receive information from a source and transfer the information to a destination.

As per claims 14 and 54, Valencia discloses the invention substantially as claimed.

However, Valencia does not explicitly disclose:

- wherein said first connection object includes a list of network addresses.

Heimendinger discloses an apparatus and method for reception and transmission of information using different protocols including wherein said creating an egress PPP object includes:

- wherein said first connection object includes a list of network addresses (col. 17, lines 1-12).

Given the teaching of Heimendinger, it would have been obvious to one of ordinary skill in the art to modify Valencia by implementing or incorporating a list of IP addresses in order to compare the IP address to the list of IP addresses which require PPP connections allowing a PPP destination object to be created to receive and transfer information.

As per claims 15, 40 and 55, Valencia discloses the invention substantially as claimed.

However, Valencia does not explicitly disclose wherein said creating an egress IP object includes:

- creating a second connection object containing a range of IP addresses; and

- creating a service object associated with IP frame forwarding through a third interface.

Heimendinger discloses an apparatus and method for reception and transmission of information using different protocols including wherein said creating an egress PPP object includes:

- creating a second connection object containing a range of IP addresses; and
- creating a service object associated with IP frame forwarding through a third interface (col. 7, lines 15-32 and col. 16, lines 32-67; The session object (ingress PPP object), 316, source object (host object) 312 and destination PPP object (egress PPP object) of Heimendinger meets the definition of the ingress, host and egress objects defined by the applicants' specification on pg. 12, lines 11-16. Heimendinger teaches that the objects are created are based on information received from the session object when dialing a number to establish a PPP connection).

Given the teaching of Heimendinger, it would have been obvious to one of ordinary skill in the art to modify Valencia by implementing or incorporating "object-oriented" software to create and link different objects from the primary object classes in order to receive information from a source and transfer the information to a destination.

As per claims 16 and 56, Valencia discloses the invention substantially as claimed.

However, Valencia does not explicitly disclose:

- wherein said second connection object includes a list of network addresses.

Heimendinger discloses an apparatus and method for reception and transmission of information using different protocols including wherein said creating an egress PPP object includes:

- wherein said second connection object includes a list of network addresses (col. 17, lines 1-12).

Given the teaching of Heimendinger, it would have been obvious to one of ordinary skill in the art to modify Valencia by implementing or incorporating a list of IP addresses in order to compare the IP address to the list of IP addresses which require PPP connections allowing a PPP destination object to be created to receive and transfer information.

As per claims 17 and 57, Valencia discloses the invention substantially as claimed.

However, Valencia does not explicitly disclose further maintaining a forwarding information base for said host object, said forwarding information base containing:

- an association between said access PPP object and an address of said client; and
- a default link to said aggregation PPP object.

Heimendinger discloses an apparatus and method for reception and transmission of information using different protocols including wherein said creating an egress PPP object includes:

- an association between said access PPP object and an address of said client; and
- a default link to said aggregation PPP object (col. 7, lines 15-32, col. 16, lines 32-67 and col. 17, lines 1-12).

Given the teaching of Heimendinger, it would have been obvious to one of ordinary skill in the art to modify Valencia by implementing or incorporating “object-oriented” software to create and link objects (ingress, host and egress PPP objects) from the primary object classes in order to receive information from a source and transfer the information to a destination.

As per claims 18 and 58, Valencia discloses the invention substantially as claimed.



However, Valencia does not explicitly disclose:

- wherein said creating said first connection object includes adding into said forwarding information base an association between said aggregation PPP object and a corresponding network address, and
- said creating said second connection object includes adding into said forwarding information base an association between said service object and a corresponding network address.

Heimendinger discloses an apparatus and method for reception and transmission of information using different protocols including wherein said creating an egress PPP object includes:

- wherein said creating said first connection object includes adding into said forwarding information base an association between said aggregation PPP object and a corresponding network address, and
- said creating said second connection object includes adding into said forwarding information base an association between said service object and a corresponding network address (col. 7, lines 15-32 and col. 16, lines 32-67; The session object (ingress PPP object), 316, source object (host object) 312 and destination PPP object (egress PPP object) of Heimendinger meets the definition of the ingress, host and egress objects defined by the applicants' specification on pg. 12, lines 11-16. Heimendinger teaches that the objects are created are based on information received from the session object when dialing a number to establish a PPP connection).

Given the teaching of Heimendinger, it would have been obvious to one of ordinary skill in the art to modify Valencia by implementing or incorporating “object-oriented” software to create and link different objects from the primary object classes in order to receive information from a source and transfer the information to a destination.

As per claim **26**, Valencia discloses:

- wherein said domain information determiner obtains said user domain information using a service profile (col. 4, lines 45-65).

As per claim **37**, Valencia discloses the invention substantially as claimed.

However, Valencia does not explicitly disclose wherein said forwarding information base further includes:

- an association between said egress IP object and a corresponding network address .

Heimendinger discloses an apparatus and method for reception and transmission of information using different protocols including wherein said creating an egress PPP object includes:

- an association between said egress IP object and a corresponding network address (col. 7, lines 15-32, col. 16, lines 32-67 and col. 17, lines 1-12).

Given the teaching of Heimendinger, it would have been obvious to one of ordinary skill in the art to modify Valencia by implementing or incorporating “object-oriented” software to create and link objects (ingress, host and egress PPP objects) from the primary object classes in order to receive information from a source and transfer the information to a destination.

***Conclusion***

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat. No. 6,094,437 to Leohndorf, Jr. et al

U.S. Pat. No. 6,628,671 to Dynarski et al

U.S. Pat. No. 6,452,920 to Comstock

U.S. Pat. No. 6,073,176 to Baindur et al

U.S. Pat. No. 6,118,785 to Araujo

U.S. Pat. No. 5,894,557 to Bade et al

U.S. Pat. No. 6,614,809 to Verma et al

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaShonda T. Jacobs whose telephone number is 703-305-7494.


The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on 703-308-7562. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LaShonda T. Jacobs  
Examiner  
Art Unit 2157

ltj  
April 3, 2003

  
ARIO ETIENNE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100